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IN THE CLAIMS

Please amend the claims as follows:

- 1 1. (Withdrawn) A method of p-type doping in ZnO comprising:
- forming an acceptor-doped material having ZnO under reducing conditions,
- 3 thereby insuring a high donor density; and
- annealing the specimens of said acceptor-doped material at intermediate
- 5 temperatures under oxidizing conditions so as to remove intrinsic donors and activate
- 6 impurity acceptors.
- 1 2. (Withdrawn) The method of claim 1, wherein said reducing conditions comprise a
- 2 hydrogen containing atmosphere.
- 1 3. (Withdrawn) The method of claim 1, wherein said reducing conditions comprise a
- 2 non-hydrogen containing atmosphere.
- 4. (Withdrawn) The method of claim 1, wherein said acceptor-doped material comprises
- a substrate, a n-type ZnO layer deposited on said substrate, and a p-type layer deposited
- on said n-type ZnO layer.
- 1 5. (Withdrawn) The method of claim 1, wherein said intermediate temperatures
- 2 comprise a temperature range between 200 °C and 700 °C.
- 6. (Withdrawn) A method of forming p-n junctions using p-type ZnO comprising:
- forming an acceptor-doped material having ZnO under reducing conditions,
- 3 thereby insuring a high donor density; and

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- annealing the specimens of said acceptor-doped material at intermediate
- 5 temperatures under oxidizing conditions so as to remove intrinsic donors and activate
- 6 impurity acceptors.
- 7. (Withdrawn) The method of claim 6, wherein said reducing conditions comprise a
- 2 hydrogen containing atmosphere.
- 8. (Withdrawn) The method of claim 6, wherein said reducing conditions comprise a
- 2 non-hydrogen containing atmosphere.
- 9. (Withdrawn) The method of claim 6, wherein said acceptor-doped material comprises
- a substrate, a n-type ZnO layer deposited on said substrate, and a p-type layer deposited
- 3 on said n-type ZnO layer.
- 1 10. (Withdrawn) The method of claim 6, wherein said intermediate temperatures
- 2 comprises a temperature range between 200 °C and 700 °C.
- 1 11. (Currently Amended) A wide band gap semiconductor device comprising:
- 2 a substrate;
- a n-type ZnO layer directly formed on said substrate; and
- a p-type ZnO layer directly formed on said n-type ZnO layer;
- wherein said n-type ZnO layer and said p-type ZnO layer are annealed in air to
- 6 activate p-type conductivity.
- 1 12. (Previously Presented) The wide band gap semiconductor device of claim 11,
- 2 wherein said p-type ZnO layer is produced in reducing conditions comprising a
- 3 hydrogen containing atmosphere.

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- 1 13. (Previously Presented) The wide band gap semiconductor device of claim 11,
- 2 wherein said p-type ZnO layer is produced in reducing conditions comprising a non-
- 3 hydrogen containing atmosphere.
- 1 14. Canceled.
- 1 15. (Previously Presented) The wide band gap semiconductor device of claim 11,
- wherein said n-type ZnO layer and said p-type ZnO layer are annealed between 200 °C
- 3 and 700 °C.
- 1 16. (Currently Amended) A p-n junction comprising:
- 2 a substrate;
- a n-type ZnO layer <u>directly</u> formed on said substrate; and
- a p-type ZnO layer <u>directly</u> formed on said n-type ZnO layer;
- 5 wherein said n-type ZnO layer and said p-type ZnO layer are annealed in air to
- 6 activate p-type conductivity.
- 1 17. (Previously Presented) The p-n junction of claim 16, said p-type ZnO layer is
- 2 produced in reducing conditions comprising a hydrogen containing atmosphere.
- 1 18. (Previously Presented) The p-n junction of claim 16, wherein said p-type ZnO layer
- 2 is produced in reducing conditions comprising a non-hydrogen containing atmosphere.
- 1 19. (Cancelled).
- 20. (Previously Presented) The p-n junction of claim 16, said n-type ZnO layer and said
- 2 p-type ZnO layer are annealed between 200 °C and 700 °C.